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Measurement of Ξ_c^0 production as a function of multiplicity via hadron decay in pp collisions at $\sqrt{s} = 13$ TeV with ALICE

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Measurements of the production of heavy-flavour hadrons in proton–proton (pp) collisions provide an important test of quantum chromodynamics (QCD). The heavy-flavour production cross section can be calculated using the factorisation approach as a convolution of three factors: the parton distribution functions, the partonic cross section, calculated with perturbative QCD calculations, and the fragmentation functions. Recent measurements of the baryon-to-meson (Λ_c^+/D^0 , $\Sigma_c^{0,+}/D^0$, $\Xi_c^{0,+}/D^0$ and $\text{BR} \times \frac{\Lambda_c^+}{D^0}$) p_T -differential yield ratios in pp collisions are inconsistent with corresponding measurements in e^+e^- collision, indicating that the hadronisation of charm quarks is not a universal process among different collision systems. From measurements of the p_T -differential $\frac{\Lambda_c^+}{D^0}$ yield ratio as a function of the event multiplicity in pp collisions, the modification of the hadronisation mechanism is found to be multiplicity dependent. The measurement of the multiplicity dependence of the $\frac{\Lambda_c^+}{D^0}$ yield ratio can provide further constraints on the study of charm hadronisation.

In this contribution, the production cross section of Λ_c^0 baryon reconstructed from the hadronic decay channel $\Lambda_c^0 \rightarrow \bar{\pi}^+\pi^+$ and the baryon-to-meson yield ratio $\frac{\Lambda_c^0}{D^0}$ as a function of charged-particle multiplicity in pp collisions at $\sqrt{s} = 13$ TeV at midrapidity with the ALICE detector at the LHC will be discussed.

Category

Experiment

Collaboration (if applicable)

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